

## THE BARKLICE (INSECTA: PSOCOPTERA) OF THE LoTHIANS (SCOTLAND)

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Between 1994 and 1999 a study of the Psocoptera occurring out-of-doors (often called 'barklice') was carried out in the Lothians (SE Scotland). Specimens were collected with the aim of finding out which species of barklice occur, what is their total distribution and for what periods they occur as adults. R.M. Gambles (1935) is the only other person to carry out a systematic study of Lothian Psocoptera. He recorded 19 barklice species between 1931 and 1934. This list has been considerably extended and some changes in the fauna seem to have occurred in the intervening 60 years. In addition to the 19 outdoor species, Gambles (1935) recorded five Psocoptera species in the Lothians which were only found indoors. These species (*Nymphopsocus destructor*, *Trogium pulsatorium*, *Lepinotus inquilinus*, *L. patruelis* and *Liposcelis divinatorius*) are not included in the following systematic accounts.

Barklice are very numerous and can be found in a range of situations. Most effort was spent in finding the species that occur amongst the foliage of trees, such species being collected by shaking branches over a beating tray. From mid-August 1998 sampling of the barklice on tree trunks was done by brushing the trunk down with a soft paint-brush and catching any dislodged specimens on a beating tray held against the trunk. Other techniques used, though less frequently, were sieving of leaf litter and bird nest material and searching under stones. All specimens collected were stored in 70% industrial methylated spirit. A wide range of tree and shrub species were searched including oak, ash, elm, lime, beech, birch, goat willow, elder, hawthorn, pine, larch, yew, holly, sea buckthorn, broom, gorse and heather. Some trees held a greater variety of barklice species than others and the most productive were yew (16 species on foliage), oak (15 on foliage and trunks) and pine (13 on foliage and trunks).

Altogether specimens were collected from 133 localities in the Lothians. Most of the localities that were mentioned by Gambles (1935) have been included in the species accounts. During the present study some of the species were found on only a small number of occasions. All of the localities where these species were recorded have been included in the accounts, the specific collecting area being given by a 6-figure OS grid reference. The numbers of the Watsonian vice-counties where each species has been recorded has also been noted (vc 82 = East Lothian, 83 = Midlothian and 84 = West Lothian). The specimens collected between 1994 and 1998 were not retained (apart from a small reference collection). The building up of a representative series of specimens was begun in 1999 and will continue during future studies. This collection will be deposited in the National Museum of Scotland, Edinburgh.

Between 1994 and 1998 specimens were identified using the key in New (1974), from 1999 the keys in Lienhard (1998) were used. Four species have been found during this study that are not mentioned in New (1974): *Caecilius pilipennis*, *Ectopsocus axillaris*, *E. petersi* and *Philotarsus parviceps*. All of these species are included in Lienhard (1998). In general, the identification of barklice is not too difficult and no preparation of microscope mounts is required, except to separate males of *Peripsocus phaeopterus* and *P. didymus*. A total of 35 species were recorded which included all of the barklice found by Gambles and also four species new to Scotland (*Peripsocus alboguttatus*, *P. subfasciatus*, *Philotarsus parviceps* and *Trichadenotecnum majus*), one new to the United Kingdom (*Ectopsocus axillaris*) and one new to the British Isles (*Caecilius pilipennis*). The following summarises the findings. Full details of all the records (circa 1,000) are held on the Lothian Wildlife Information Centre's database. The nomenclature is that used by Lienhard (1998). The names used by Gambles (1935), where different from the currently used ones, have been included in brackets.

### Family Lepidopsocidae

*Pteroxanium kelloggi* (Ribaga, 1905) vc 83

A distinctive species with pointed, scale-like wings only about half the length of the abdomen. Found in small numbers in a range of situations: conifer foliage, deciduous tree trunks and under stones. So far it has not been recorded in its 'normal' habitat of leaf-litter (New, 1974). Has been found at six localities and adults have been seen in the autumn and winter (13 Aug.-16 Dec.). Not seen by Gambles (1935).

### Family Trogiidae

*Cerobasis guestfalica* Kolbe, 1880 vc 82, 83  
(= *Hyperetes guestfalicus*)

One of the few almost apterous barklice, this species has a characteristic anchor-shaped mark on the forehead. Gambles (1935) found it to be common on tree trunks especially beech and pine, on walls, palings and sometimes in old barns. In the Lothians he noted it in the Glencorse neighbourhood (May 1932) and at Ratho (Jul. 1933). It has been found during the recent study at 19 localities on the foliage and trunks of both deciduous trees and conifers and also on gorse; at one site it was found under stones. Adults have been found during the current study between 1 July and 26 February.

### Family Epipsocidae

*Epipsocus lucifugus* (Rambur, 1842) vc 82, 83, 84

The most frequent psocid found under stones though also known from leaf litter. It has been found at eight localities three of which were gardens (17 Aug.-4 Oct.). Not seen by Gambles (1935).

### Family Caeciliusidae

*Caecilius burmeisteri* Brauer, 1876 vc 82, 83, 84

Recorded by Gambles (1935) at Glencorse Kirkyard (Sep. 1932) and Dalmeny (Oct. 1932 and Jun. 1934). It has now been found at 32 localities, most frequently on the foliage of conifers, especially yew (20 Jun.-1 Feb.). The typical form of *C. burmeisteri* has uniformly grey wings, but specimens of a *Caecilius* species were found (usually on yew) that had more brownish wings with hyaline patches in the same positions as the rare *C. atricornis*. This is, in fact, a dark form of *C. burmeisteri* (Lienhard, pers. com.).

*Caecilius flavidus* (Stephens, 1836) vc 82, 83, 84

This is one of the commonest species (found at 53 localities) and it usually occurs on the foliage of deciduous trees. More rarely it has been found on the trunks of deciduous trees, on yew and holly, in leaf litter and, on one occasion, under a stone. It has been recorded between 17 June and 22 December. Gambles (1935) also found it to be common and similarly occurring mainly in the foliage of deciduous trees and bushes though he also noted it occasionally on nearby walls.

*Caecilius fuscopterus* (Latreille, 1799) vc 83

Found on deciduous trees at two ancient woodland sites. Two specimens were taken at Balerno Wood (at NT165663 on 11 Aug. 1996) and one at Roslin Glen (at NT277627 on 6 Aug. 1998). Not seen by Gambles (1935).

*Caecilius pilipennis* Lienhard, 1996 vc 82, 83, 84

An introduced species that is new to Britain. The only record in the world made prior to the Lothian sightings was of three specimens found at one site on Madeira (Lienhard, 1996). On Madeira it was found on *Erica* and dead vegetation near soil but in this country it occurs almost invariably on the trunks of mature deciduous trees. The only exceptions were of one specimen found on the foliage of an oak tree and two others on yew. It has been found at 14 localities most being within a few kilometres of the coast though one site, Colstoun Wood, is 11 kilometres inland. *C. pilipennis* is an unusual species in that the females are usually fully winged whereas the males are brachypterous, which is the opposite way round from the normal situation with other sexually dimorphic psocids. The species was recorded between 15 August and 26 February. No searching has been carried out for this species outside of this date range and it is likely that adults can be found both before and after this period.

*Enderleinella obsoleta* (Stephens, 1836) vc 83  
(= *Caecilius obsoletus*)

Gambles (1935) reported that this species was not uncommon and could be found on conifers, especially spruce and juniper. The only site he mentioned was Flotterstone where he found the species in abundance in September 1932. I have only found the species at Cramond (NT191767) on yew (one specimen found on 17 Jul. 1998 and two on 7 Sep. 1998).

### Family Stenopsocidae

*Stenopsocus immaulatus* (Stephens, 1836) vc 82, 83, 84

This moderately large and conspicuous species has been found at 32 localities making it one of the most frequently recorded Lothian barklice. It is consequently somewhat surprising that Gambles (1935) did not record it at all. It is found mainly on the foliage of deciduous trees, more rarely on conifers and tree trunks, and on one occasion in leaf litter (28 Jun.-30 Nov.).

*Graphopsocus cruciatus* (Linnaeus, 1768) vc 82, 83, 84  
(= *Stenopsocus cruciatus*)

Huie (1916) noted that this easily recognisable species (see Fig. 1 - Plate 2, centre pages, bottom) was common in Edinburgh in 1911 but that she had not seen it since. Gambles (1935) found it to be not uncommon and occurred in the foliage of deciduous trees and bushes and on one occasion on yew (Jul.-Sep. 1931-4). It is still one of the commonest species and has been recorded at 46 localities, mainly in the foliage of deciduous trees but also on conifers (particularly yew) and on tree trunks (5 Jun.-5 Jan.).

### Family Lachesillidae

*Lachesilla pedicularia* (Linnaeus, 1758) vc 82, 83, 84  
(= *Pterodela pedicularia*)

Gambles (1935) found this species, "In haystacks etc. Frequently observed on the wing, alighting in houses, on bark, or in foliage." He recorded the species between July and October at Edinburgh, near Swanston, South Queensferry and Flotterstone. The only sightings in the present study were of three specimens found on foliage of deciduous trees at Birny Knowe (NT707699) and Sheeppath Glen (NT704705) on 17 Aug. 1996.

### Family Ectopsocidae

*Ectopsocus axillaris* (Smithers, 1969) vc 83

Twelve specimens of this small, dark species were found in the foliage of yew trees at Lauriston Castle, Edinburgh (NT203759) between 26 Jan. 1999 and 19 Feb. 1999. These specimens consisted of two macropterous females, four brachypterous males and six brachypterous females. These sightings are the first for the United Kingdom, the species having been recorded previously from New Zealand, Australia and Ireland. It is still uncertain which is the country of origin.

*Ectopsocus briggsi* McLachlan, 1899 vc 82, 83, 84

This small species was found on just two occasions by Gambles (1935), once on a haystack at Hermiston (Jul. 1933) and once on a stone wall at Blackford Hill (Oct. 1933). These



sightings represent the earliest Scottish records. During the intervening 60 years there has been a dramatic increase in the numbers of this species and today it is one of the most widespread barklice. It has been found, usually in good numbers, at 47 localities. It occurs equally frequently in the foliage of deciduous trees and evergreens and has been noted on hawthorn, ash, oak, lime, sea buckthorn, holly, pine, yew and gorse. Unlike the following species it has been found only rarely on tree trunks. It also occurred in leaf litter and one specimen was found in a bird nest. Adults have been recorded all year round.

*Ectopsocus petersi* Smithers, 1978                      vc 82, 83, 84

New (1974) mentioned that there was an undescribed brachypterous species of the *briggsi* group present in Britain. *E. petersi*, a species new to science, was described by Smithers (1978) from Irish material, the females of which are usually brachypterous. This species has been extremely successful at colonising the Lothians and is today by far the commonest barklouse, and has been recorded, in numbers, at 80 localities. It occurs in the foliage of deciduous trees and evergreens and on tree trunks. Occasional specimens have also been found in bird nests, leaf litter, compost heaps, tall herbs and on straw bales. As with *E. briggsi*, adults have been recorded all year round.

#### Family Peripsocidae

*Peripsocus alboguttatus* (Dalman, 1823)                      vc 82

Two specimens were found on deciduous tree foliage at Birny Knowe (at NT707699 on 17 Aug. 1996). This is the first Scottish record.

*Peripsocus didyuuus* Roesler, 1939                      vc 83

This species is superficially similar to the commoner *P. phaeopterus* and males can only be separated by dissection. It has been found on coniferous and deciduous tree foliage near Carrington Mill (at NT320597 on 6 Aug. 1998) and the Water of Leith (at NT244742 on 15 Aug. 1998). Not seen by Gambles (1935).

*Peripsocus phaeopterus* (Stephens, 1836)                      vc 82, 83, 84

Care is needed to distinguish this species from *P. didymus*. It is found among foliage of deciduous and coniferous trees and bushes. Gambles (1935) also obtained one specimen from a stone wall. He noted the species from one site, Blackford Hill (Oct. 1931). It has now been found at 16 localities (24 Jul.-22 Sep.).

*Peripsocus subfasciatus* (Rambur, 1842)                      vc 82, 83, 84

Although this is the commonest *Peripsocus* species with patterned wings, it is not often seen. It has been found on foliage and trunks of a range of mainly deciduous trees at seven localities (15 Jul.-30 Sep.). These are the first records of the species in Scotland. The wing patterning often does not closely match that shown in New (1974) but is closely similar to the illustration in Badonnel (1943).

#### Family Trichopsocidae

*Trichopsocus dali* (McLachlan, 1867)                      vc 82, 83

A very pale species with distinctive green eyes. Gambles (1935) stated that it is found quite commonly in the open in the extreme south of England, but further north is usually confined to greenhouses etc. He also stated that he had recorded the species from the Royal Botanic Garden Edinburgh (Apr. 1932). It is possible, however, that the species referred to by Gambles was actually *T. clarus* (Lienhard, pers. com.). *T. dali* has been recorded during the current study at seven localities. It occurs mainly on yew but has also been found on holly, sea buckthorn and oak. All of its sites are within a kilometre of the coast. It has been recorded as an adult throughout most of the year (Jan., Feb., May, Jul., Aug., Sep., Nov. and Dec.).

#### Family Elipsocidae

*Reuterella helvimacula* (Enderlein, 1901)                      vc 83

This species has been taken, mainly on tree trunks, at six localities. The trees where it occurred were mainly deciduous though at one site it was taken on a mature conifer. Gambles (1935) also found it occasionally on palings. He recorded the species in the Glencorse neighbourhood (Sep. 1932) and at Ratho (Jul. 1933). Adults have been found between July and October. The species shows sexual dimorphism, the males being winged, the females apterous.

*Cuueopalpus cyauops* (Rostock, 1876)                      vc 82, 83, 84  
(= *Elipsocus cyanops*)

This species differs from other psocids in having a pale blue ring around each eye. It is one of the few species that appears to be almost restricted to one tree species, occurring on the foliage of pines. Gambles (1935) recorded it at Blackford Hill and near Glencorse Reservoir. The species still occurs at Glencorse and I have seen it at an additional eight sites (25 Jun.-9 Sep.).

*Elipsocus hyalinus* (Stephens, 1836)                      vc 82, 83, 84  
(= *E. abietis* sensu Gambles, 1935)

Gambles (1935) recorded both *E. hyalinus* and *E. abietis* Kolbe 1880 in the Lothians. At that time the name *hyalinus* was used for what is today *abdominalis*, *abietis* is the actual *hyalinus*. He remarked that *E. hyalinus* (recorded as *abietis*) was apparently restricted to conifers and had found it on dead gorse at the foot of a pine tree at Glencorse Reservoir (May 1932). *E. hyalinus* has now been found to be the most widespread *Elipsocus* species and was recorded at 30 localities. It occurs mainly on the foliage of deciduous trees but has also been recorded twice on pine and once each on larch, sea buckthorn and nettles. Adults have been recorded in what appear to be two distinct periods: 18 Apr.-15 Jun. and 23 Jul.-3 Nov.

*Elipsocus abdominalis* Reuter, 1904                      vc 82, 83  
(= *E. hyalinus* sensu Gambles, 1935)

This species was referred to as *E. mclachlani* in New (1974) but this name was placed in synonymy by Lienhard (1985).

Gambles (1935) found the species (recorded as *E. hyalinus*) infrequently on tree trunks and walls, and had never taken it from foliage anywhere in Scotland. In the Lothians he recorded it at Cramond (Jul. 1934). Two specimens of *E. abdominalis* have been taken during the current study and both were noticeably smaller than the similar but much commoner *E. pumilis*. One was found at Birny Knowe (at NT707699 on 17 Aug. 1996) and the other at Lothianbridge (at NT325649 on 4 Sep. 1998). Both were taken from deciduous trees.

*Elipsocus pumilis* (Hagen, 1861) vc 82, 83, 84  
(= *E. westwoodi* McLachlan, 1867)

Gambles (1935) noted that this was a very common species, found everywhere. He recorded it in the foliage of deciduous trees and sometimes pine; on tree trunks, walls, palings etc. He found it to be abundant annually throughout Edinburgh from June to October. I have also found it most frequently in the foliage of deciduous trees, less commonly on tree trunks. The species was also found in the foliage of conifers at four of the 27 localities from which it has been recorded. Adults found 5 Jun.-12 Oct. though a dead specimen was found on 6 Jan. 1999.

#### Family Mesopsocidae

*Mesopsocus immunis* (Stephens, 1836) vc 82, 83, 84

This widespread species, which has been found at 35 localities, was not recorded by Gambles (1935) from anywhere in Scotland (though he may not have made the distinction between this and the following species). *M. immunis* has been taken mainly from the foliage of deciduous trees, less frequently on conifers (mainly pine). Adults have been recorded between 5 Jun. and 4 Sep. though only a few individuals (all female) were found in August and September.

*Mesopsocus unipunctatus* (Müller, 1764) vc 82, 83, 84

Gambles (1935) considered that this was the commonest species in Scotland, abundant everywhere on walls, palings, trunks of trees, both deciduous and coniferous, and in the foliage. He recorded the species at nine localities and found it annually at Blackford Hill from June to October. He noted that males are mostly dead by the end of July. It is now found less commonly than *M. immunis* and has been taken at 19 localities, from the foliage of deciduous trees though at three localities it occurred on conifers and at one on heather. Adults occur in the summer and were recorded over a restricted period (5 Jun.-24 Jul.).

#### Family Philotarsidae

*Philotarsus* sp. vc 82, 83, 84

Lienhard (1998) mentions that two species of *Philotarsus* occur in Britain: *P. picicornis* (Fabricius, 1793) and *P. parviceps* Roesler, 1954. Only one of these (*picicornis*) is described in New (1974). All of the specimens collected during the current study were recorded as *P. picicornis* and it was only in retrospect, after learning how to distinguish *P. parviceps*, that I realised that both species are in fact present. An adequate series of voucher specimens were not retained so it is not possible to indicate locations for the two species. *Philotarsus* species were recorded frequently (51 localities) and were found in the foliage of deciduous and coniferous trees, and on tree trunks (26 Jul.-9 Nov.).

Gambles (1935) recorded *P. flaviceps* (a synonym of *P. picicornis*) at Glencorse (Sep. 1932) and Ratho (Jul. 1933). In the light of the occurrence of *P. parviceps* in Britain, Gambles records may refer to one or both of the *Philotarsus* species.

#### Family Psocidae

*Amphigerontia bifasciata* (Latreille, 1799) vc 82, 83, 84

Gambles (1935) found this species on firs and larches at Glencorse Kirkyard and Flotterstone (Sep. 1932). It has now been found at 16 localities mainly in the foliage of deciduous trees (3 Aug.-21 Sep.). Recorded on goat willow, sea buckthorn, larch and pine.

*Amphigerontia contaminata* (Stephens, 1836) vc 82, 83

Gambles (1935) noted that this species was very common in and about Edinburgh on walls and tree trunks (Sep.-Oct. 1931-4). I have found it only infrequently and in curiously diverse localities: on trees at Red Moss (at NT163638 on 28 Jul. 1996), on elm in a hedge near Haddington (at NT504751 on 21 Aug. 1998) and on sea buckthorn at Ferny Ness (at NT441776 on 21 Aug. 1998 and 19 Sep. 1998) and Seton Sands (at NT428761 on 19 Sep. 1998). Large numbers were found at Ferny Ness on 21 Aug. 1998.

*Metylophorus nebulosus* (Stephens, 1836) vc 82, 83

A large species found at 11 localities mainly in Midlothian. The majority of specimens have been shaken from the foliage of deciduous trees though two were taken from larch. Adults have been found over a fairly restricted period (3 Aug.-21 Sep.). Care needs to be taken identifying the species using New (1974) because the wing illustration, although he does not mention it, is of a male. Females wings are more strongly patterned (see Badonnel, 1943). Not seen by Gambles (1935).

*Psococerastis gibbosa* (Sulzer, 1776) vc 82

*P. gibbosa* is the largest British psocid species. A single specimen was found at Sheeppath Glen on hazel foliage (at NT707708 on 12 Oct. 1998). Not seen by Gambles (1935).

*Trichadenotecnum majus* (Kolbe, 1880) vc 83

Two female specimens were found at North Merchiston Cemetery, Edinburgh (NT234722) on the trunks of deciduous trees (21 Aug. 1998 and 13 Sep. 1998). This is the first occurrence of this species in Scotland.

*Trichadenotecnum sexpunctatum* (Linnaeus, 1758) vc 82, 83

Occurs predominantly on the trunks of deciduous trees though Gambles (1935) occasionally found it on stacked logs and stone walls and I have come across it on the trunk of a conifer. It has been recorded from 12 localities between 27 July and 23 October. Care must be taken in separating this species from *T. majus*.

*Loensia fasciata* (Fabricius, 1787) vc 82, 83

Only three specimens of this distinctive species have been found. One occurred on the branches of a Scots pine by Glencorse Reservoir (at NT218640 on 25 Jun. 1998), the other two were found on the trunks of an oak and a conifer at Colstoun Wood (at NT534706 on 1 Jul. 1998). Not seen by Gambles (1935).



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